

# **Public Goods and Private Interests: Understanding Non-Residential Demand for Green Power**

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April 23, 2001

## Abstract

This article presents the results of the first large-scale mail survey of *non-residential* green power customers in the United States. The survey explored the motivations, attitudes, and experiences of 464 business, non-profit, and public-sector customers that have voluntarily opted to purchase – and frequently pay a premium for – renewable electricity. Particular attention in this article is paid to the motivations of these organizations in purchasing renewable electricity, and our findings are compared to the extant literature on the motivations of firms to voluntarily exceed environmental regulations. Perhaps the most interesting contribution of this research comes in its demonstration of the importance of “altruism” as a motivator in non-residential green power purchases among early adopters. This finding, and the further discovery that the principal non-altruistic motivation for purchasing green power is employee morale, differs substantially from the predictions of the extant literature. Results of this study should be of value to marketers trying to meet the needs of non-residential customers, to policymakers interested in fostering and understanding non-residential demand for green power, and to academics pondering the motivations for firms to engage in such voluntary environmental initiatives.

## Acknowledgements

Work reported here was funded by the Assistant Secretary for Energy Efficiency and Renewable Energy, Office of Power Technologies of the U.S. Department of Energy under Contract No. DE-ACO3-76SF00098, as well as by the American Wind Energy Association, the National Wind Coordinating Committee, and the Energy Foundation. The authors acknowledge the support and encouragement of Jack Cadogan and Tina Kaarsberg of the U.S. Department of Energy and

Randy Swisher of the American Wind Energy Association. Detailed reviews of this article were kindly provided by professors Duane Chapman and Nancy Chau of Cornell University, and by Joe Eto and Mark Bolinger of Lawrence Berkeley National Laboratory.

## **Abbreviated Article Title**

Public Goods and Private Interests

## **Keywords**

green power, renewable energy, customer choice

# Introduction

## *Green Power Markets*

The introduction of customer choice in electricity markets worldwide brings with it the possibility of a green power market in which end-use customers volunteer to pay a premium for the supply of renewable electricity.<sup>1</sup> With only a couple years of evidence to rely upon, experience with green power marketing is limited. Green marketing activity continues to grow in the United States, Europe, and Australia. But, while niche markets for green power clearly exist, few programs have exceeded 5% penetration in the residential market. In the U.S., for example, as of mid-2000, 40% of households had access to one or more green power products. With approximately 360,000 customers purchasing green power, an overall penetration rate of just under 1% has been achieved (Wiser, Bolinger and Holt 2000).

Some analysts have argued that the relatively slow rate of green power uptake should come as no surprise. The high cost of marketing, unfavorable regulatory rules, the intangible nature of green power, and the prevailing lack of consumer awareness of the environmental impacts of energy production are frequently identified as barriers to adoption. Perhaps the most significant limitation to the long term success of the green market, however, is the contention that individual consumers act to maximize their own well being rather than the well being of society when making product choices. After all, when public environmental benefits are involved, the familiar economic concept of free riding would be expected to limit voluntary contributions for the betterment of the public good. If, in fact, this neoclassical-economic rationality prevails over the decision making of electricity consumers, it would appear that the green market's potential will be severely limited (Rader and Short 1998, Wiser 1998).

More optimistic observers contend that green power marketing may offer a significant opportunity for renewable energy in the long term (Nakarado 1996). After all, there is empirical

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<sup>1</sup> In the United States, green power is offered to customers by regulated utilities and - in those markets open to retail competition - by competitive green marketers. Over 70 regulated utility programs are now offered in U.S., within which utility ratepayers are given the opportunity to pay more on their electricity bills to support renewable energy. Meanwhile, in the markets open to retail competition, a number of competitive marketers offer a range of renewable energy products, typically sold at a premium.

evidence in other markets that suggests that consumers do not always act in their own narrow self-interest. Instead, consumers are sometimes willing to voluntarily contribute towards public environmental benefits through their own behaviors (e.g., recycling) or purchases (e.g., green consumer products). Experimental evidence also shows that individuals frequently contribute more towards public goods than predicted by traditional economic models (Andreoni 1995).

For the most part, consideration of such non-economic motivations has focused on residential households, hence motivating the current focus of many green marketers on the residential marketplace. A standard presumption of neoclassical economics is that businesses make purchase decisions based purely on economic gains and are unlikely purchasers of green power and the public environmental benefits that accrue with such purchases.

Notwithstanding these claims, however, an interest in non-residential green power sales has emerged. Limited market research shows that up to 60% of businesses indicate a willingness to pay more for green power (Farhar 1999, Farhar and Houston 1996, Hoefgen 1999). More persuasively, where green power programs have targeted non-residential customers, those customers have often constituted over 20% of total green power sales (Wiser, Bolinger and Holt 2000). Some therefore believe that non-residential purchasers of green power could conceivably make substantial contributions to overall green power demand.

### ***Research Objectives***

The principle purpose of this study is to explore the non-residential market for green power, which encompasses business, public sector, and non-profit organizations. Though numerous studies have investigated the green power preferences and motivations of residential customers, publicly available research focusing on the non-residential market is limited (see, e.g., Holt 1997, Kalweit and Peterson 1999). To build and expand upon existing work, and to deeply explore customer motivations, we chose to implement the first large-sample mail survey of *current* non-residential green power customers in the United States: 464 such customers were surveyed through the work reported here.

While the survey queried customers about a range of issues associated with their green power purchase, in this article we focus almost exclusively on those results that relate to customer motivations in purchasing – and typically paying more for – renewable electricity. Our interest in customer motivations derives from both theoretical and practical considerations:

- From a theoretical perspective, we wish to add to an emerging strand of empirical and theoretical literature that asks why a firm – presumably driven by profit motivations – would choose to exceed environmental regulations and engage voluntarily in corporate environmentalism. Insofar as non-residential customers are volunteering to pay extra for their electricity in order to lend financial support to renewable energy generation, the purchase of a green power product is similar to other voluntary environmental initiatives in which a firm might engage. Accordingly, this paper uses the purchase of green power as a case study for those interested in broader issues of corporate environmentalism and voluntary over-compliance with environmental regulation.
- From a more practical perspective, we also believe that understanding the motivations underlying non-residential purchases of green power will be of critical use to policymakers interested in fostering and understanding non-residential demand for green power, and to purveyors of green power trying to increase and sustain demand for their product among non-residential customers. Finally, an understanding of customer motivations sheds light on the future size and scope of this voluntary approach to supporting renewable generation.

### ***Organization of Paper***

The next section of this article provides a brief survey of the relevant academic literature on organizational motivations to engage in voluntary environmental initiatives. The section that follows reports on the survey methods used in this study and the limitations of the methods selected. The subsequent section briefly profiles respondents to the survey. The discussion and analysis then turns to the motivations of customers in purchasing green power. Related empirical results are presented that offer further insights into the motivations of survey respondents. The article closes with brief summary remarks and a discussion of the possible role of non-residential customer demand in supporting renewable electricity.

## Why Firms Voluntary Engage in Environmental Initiatives

Voluntary environmental agreements and environmental self-regulation by corporations are gaining increased acceptance and popularity among a variety of stakeholders, and academic interest in such voluntary environmental initiatives is increasing rapidly. While much of the existing literature in this area is either focused on individual case studies or is highly theoretical and abstract, there is an empirical strand of the literature that explores the factors that affect the participation decisions of firms in voluntary environmental initiatives (e.g., Arora and Cason 1996, Welch, Mazur and Bretschneider 2000, Henriques and Sadosky 1996). Because we rely heavily on this literature, both in the development of our survey instrument and in constructing a theoretical framework in which to evaluate our empirical results, we briefly summarize the findings of this literature here.

To summarize, the extant literature has identified a number of explanations for the phenomenon of organizational over-compliance with environmental regulations and the initiation of voluntary environmental initiatives. In particular, attention has thus far focused on four (non-exclusive) motivations:

- efficiency gains,
- reducing the risk of future environmental regulation,
- green marketing, and
- improved public image.

Text Box 1 provides a more detailed discussion of these possible motivations, each of which is explored in this article as a possible motivator for non-residential green power purchases.

**Text Box 1 : What Motivates Firms and Institutions to Voluntarily Exceed Mandatory Environmental Standards?**

- ◆ Efficiency Gains: Industrial ecology and related literatures in corporate environmentalism stress that – in many instances – voluntary pollution reduction can be accompanied by higher resource productivity or improved product quality, particularly in an industrial or manufacturing context. In such circumstances, firms' voluntary contributions to a healthier environment may be motivated by cost minimization (e.g., Porter and van der Linde 1995, Monty 1991, Walleye and Whitehead 1994, O'Rourke, Connelly and Koshland 1996, Romm 1994, Lober 1998).
- ◆ Reducing the Risk of Future Regulation: A growing body of literature considers an organization's decision to volunteer as an attempt to pre-empt or affect the design of more stringent environmental regulation (e.g., Segerson and Miceli 1998, Henriques and Sadosky 1996, Barrett 1991). Under this model, firms voluntarily commit to environmental improvement with the underlying objective of either achieving reductions in regulatory scrutiny – possibly in an area unrelated to the voluntary activity – or influencing the scope of the regulations to provide competitive advantage to the firm. Accordingly, studies have found that voluntary commitments may be less likely where the threat of regulation is small and/or where the firm has greater bargaining power than the regulator (Segerson and Miceli 1998, Welch, Mazur and Bretschneider 2000).
- ◆ Green Marketing: With high levels of environmental concern among consumers and an ever increasing number of green products entering the market, an important potential motivation for voluntary environmental commitments is the desire to differentiate products based on their environmental attributes and therefore gain new customers and build the loyalty of existing ones through green marketing (Arora and Gangopadhyay 1995, Ottman 1998, Kirchhoff 2000).
- ◆ Improved Public Image: Closely related to green marketing considerations are more general attempts by organizations to manage the public perception of their environmental performance (Arora and Cason 1996). While it is difficult to assign a precise monetary value to a good reputation, it is nevertheless perceived by both public and private sector organizations as being important to maintain. Perhaps the most tangible economic gains (and losses) associated with a firm's reputation have been documented by changes in capital market valuations resulting from environmental disclosures (Konar and Cohen 1997, Austin 1998, Khanna, Rose and Bojilova 1998).

This existing literature has focused principally on some of the largest firms in the U.S. economy, however, and the importance of each of these four motivations is premised on the belief that corporate environmentalism will only be successful if organizations believe that they will directly benefit from the resources they devote to improved environmental performance. Because our sample of non-residential green power purchasers included many small firms (much smaller

than those typically considered in the existing literature), we hypothesized that, in addition to those motivations identified above, two additional motivations – not previously emphasized in the existing literature – could prove significant:

- ◆ Employee Morale: We hypothesized that some organizations may derive value from and therefore be motivated by improving employee morale and enhancing their ability to recruit top college graduates. Though relatively little emphasis has been placed on this motivation in empirical work, improving employee morale through enhanced environmental performance has been identified in case studies and surveys as possibly an important motivator of corporate environmental initiatives (Smith 1994, Fri 1992, Henriques and Sadosky 1996).
- ◆ Altruism: We further hypothesized that some organizations may simply be motivated by altruism, driven by a desire to maintain their civic responsibility and a strong organizational commitment to the environment rather than by economic gain. In studies of the voluntary environmental contributions of individuals and of interest group participation more broadly, altruistic motivations are frequently mentioned as being a key motivator (e.g., Vining, Linn and Burdge 1992, Knoke 1988). There has been less attention paid, however, to the potential role of altruism in the decision making of non-residential customers generally, and businesses in particular (see, e.g., Weaver 1996). Altruism as a key motivation is dismissed by some observers of corporate environmentalism (Fri 1992) and traditional models of firm behavior assume a profit-maximizing firm that cares little for purely altruistic investments. Despite a dearth of empirical evidence, we suspect that admitting that altruism exists among individuals who work within organizations, but failing to consider altruism as a potential motivation for organizations themselves, is premature (Walley and Whitehead 1994). Accordingly, we view altruistic concern for the environment as worthy of empirical investigation and in need of further attention in the theoretical literature.

Through both direct and indirect questioning, this study explores the relative importance of these six motivations in the purchasing decisions of non-residential green power customers.

## Methods

### *Survey Procedures and Sample*

To investigate non-residential customer motivations in purchasing green power, we chose to implement the first large-sample mail survey of current non-residential green power customers in the United States. The target population of the survey was non-residential customers (encompassing business, public sector, and non-profit organizations) in the United States that were paying a premium for green power. This includes two population groups:

1. customers purchasing an optional green power service from a green pricing program offered by their local regulated utility, and
2. customers in restructured markets (California and Pennsylvania) purchasing a green power product from one of several competitive electricity marketers.

Our sample population was compiled with the cooperation of regulated utilities and competitive marketers offering green power products. The two largest competitive green marketers agreed to participate in our survey by providing customer contact information, as did five regulated utilities that were known to have the largest number of non-residential customer sign-ups.

Geographically, our sample is diverse, containing customers from the competitive markets of California and Pennsylvania and from regulated markets in Oregon, California, Wisconsin, and Colorado. Because of subsidies available in California, some green power products have been sold at a discount. Assuming that such subsidies are unlikely to persist indefinitely and that green power will more frequently sell at a premium, we did our best to exclude from our sample customers purchasing these products (which include approximately 40,000 non-residential customers in California).

Overall, we believe our sample population represents the larger target population reasonably well. As shown in Table 1, the entire sample population consists of 1,800 customers, each of which received the mail questionnaire in the spring of 2000. A follow-up reminder and additional copy of the questionnaire were sent to non-respondents of the initial mailing. Due to

the limited follow-up procedures, we expected a low response rate. Though the 27% response rate is not high, given our sample population (business customers) and mail procedures (limited follow-up) we were pleased with this level of response and the 464 completed surveys returned.

TABLE 1 HERE

### ***Methodological Limitations***

As with any research, a number of methodological limitations challenge our ability to generalize the results of the survey. Perhaps most importantly, non-response and selection biases are expected to be especially prevalent given the low response rate to the survey, challenging our ability to generalize from our sample to the sample population much less to the overall target population. Quite possibly, those that chose to return the survey are more dedicated to the concept of green power than those who were unwilling to respond. We also acknowledge that our target population is a small one and is limited by the incipient state of the green power market. Accordingly, it is difficult to generalize the experiences of these “early adopters” to the larger potential market for green power among non-residential customers. Finally, an additional methodological challenge – which pervades all survey work - is that we must rely on the stated motivations and actions of our respondents. For a variety of reasons, responses to surveys may or may not comport with actual practice. To reduce the risk of drawing erroneous conclusions from such responses, we frequently rely on the answers to multiple questions to support our interpretations of the survey results.

## **Profiling the Respondents**

Before describing the results of our survey on customer motivations, it is useful to begin by providing a brief profile of our respondents. As shown in Table 1, the split between customers of competitive marketers and regulated utilities is approximately equal, with 48% competitive marketer customers and 52% regulated utility customers.

The majority of the non-residential green power customers that responded to the survey are businesses (82%), with lesser numbers of public sector (4%) and non-profit (14%) organizations. For analysis purposes, we frequently combine the latter two categories, which in aggregate represent 18% of the respondents. Of those businesses responding to our survey, 82% report being primarily involved in retail sales and services compared to 18% that report being principally involved with primary industry, manufacturing, or wholesale trade.

Previous research investigating the participation of businesses in voluntary environmental programs has found that larger organizations are often more likely to volunteer (Welch, Mazur and Bretschneider 2000, Arora and Cason 1996). Based on the results from our survey, it is evident that non-residential purchasers of green power range from small organizations to some of the larger corporations in the United States, but that our sample is weighted more towards smaller organizations than much of the existing literature. For the purposes of further analysis, we divided the respondents into three size categories:

- The “small” category, representing 57.5% of our respondents, is classified as organizations with annual revenues or budgets of less than \$500,000.
- The “medium” category spans annual revenues or budgets of \$500,000 to \$10,000,000 and contains 31.6% of respondents.
- Finally, the “large” category with over \$10,000,000 in annual revenues or budgets is represented by 10.9% of our respondents. (Though some very large institutions are included in our sample, it is important to note that many of the organizations in this largest category are still relatively small relative to, for example, typical publicly traded firms in the U.S.).

Of those respondents that were willing to share data on their electricity expenditures, a full 80% report annual electricity expenditures of less than the national average expenditure for non-residential customers of \$8,226. Several respondents have sizable electricity expenditures, however, leading to a mean annual expenditure among our respondents of \$88,000, well above the national average.

To assess the perceptions of our respondents about the environmental predilections of their own customers (or stakeholders, in the case of non-profit and government customers), respondents were asked to estimate what percentage of their patrons made a concerted effort to buy green products and services. Of our respondents, 47% state that over 20% of their customers make such a concerted effort, whereas 33% report that they believe between 5% and 20% of the market they serve is environmentally oriented and 20% state that less than 5% of their customers make such efforts.

Based on our sample, it would appear that the incremental cost of green power is relatively modest for most organizations: 69% of our respondents report that green electricity is costing them more than other available options, while 24% report that it costs them about the same and 6% claim it is costing them less. This last statistic suggests that our attempts to screen out those customers for whom green power is the least cost option were largely successful. Meanwhile, the average green premium (relative to electricity rates prior to the green power purchase) reported by non-residential customers, including those who reported receiving a discount or paying no premium, is 8.3%.<sup>2</sup> In aggregate, the total reported annual incremental cost of renewable energy for our respondents is \$451,657. The yearly incremental cost for small organizations averages \$140, compared to \$997 for medium organizations and \$9,030 for large organizations. Small organizations contribute only 6% of the aggregate incremental cost, compared to a 22% contribution by medium organizations and 72% for the large organizations. This last statistic shows that, while a minority of non-residential purchasers are large organizations, these customers as a group contribute significantly more than the smaller firms in our sample.

## The Motivations of Green Power Purchasers

This study considered all six of the aforementioned possible motivations for green power purchases in an effort to determine which motivations play more important roles and how stated motivations vary with customer characteristics. In this section we first report on direct survey results that queried customers on their motivations in purchasing green power, and then build a regression model to evaluate how motivations vary with customer characteristics. A key finding from these survey results is the importance ascribed by organizations to altruistic factors and a desire to build employee morale. A subsequent section of this article provides further support for these findings – which differ substantially from those found in the existing literature on the motivations of firms to voluntarily engage in environmental initiatives – by reporting the results of other survey questions.

### *Organizational Motivations: Summary Statistics*

To most directly evaluate customer motivations, respondents were first asked to indicate the importance of several different motives in influencing their organization's decision to purchase green power (5-point scale; 1 = not important, 5 = very important). Table 2 illustrates the wording used to distinguish possible motivations.

TABLE 2 HERE

As revealed in Table 3, our results differ from the existing literature on the motivations for firms to engage in voluntary environmental initiatives. First, neither efficiency gains nor a reduction of regulatory risk are ranked highly by our respondents as important motivators. Despite the emphasis in the literature on these motivations, it is not surprising that they hold limited explanatory power among our sample. After all, green power is typically sold as a premium product – efficiency gains are therefore not relevant. Nor would the purchase of green power

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<sup>2</sup> If weighted by total electricity expenditure, the average premium paid, (i.e.,  $\Sigma \$ \text{premiums paid monthly} / \Sigma \$ \text{monthly electricity expenditures}$ ) is just over 1%, influenced considerably by the presence of a few very large firms with modest green power payments.

have an obvious influence on the fate of future regulatory action, especially for the smaller firms represented in our sample.

#### TABLE 3 HERE

Second, and more interesting, are the remaining results, which suggest that altruistic factors (organizational values and civic responsibility) rank as the dominant motivations, followed by employee morale. (The relative emphasis on altruistic motives is further supported by evidence presented later in this article). Public image and green marketing, both viewed as potentially important motivators in the existing literature, are given secondary importance.<sup>3</sup> In contrast to the current stream of literature and its focus on just those motivations that are consistent with the profit motive of firms, then, our results suggest that green power customers are acting on a blended set of personal and business motives. As discussed below, these results can, in part, be explained by the predominance of small organizations in our sample.

#### ***Factor Analysis***

In an effort to gain insight into the more general motivational structure underlying purchasing decisions, a factor analysis of the rankings of the seven motivations was conducted using orthogonal (varimax) rotation. The results are consistent with our initial expectation that there would be two broad patterns of stated motivations to purchase green power: one encompassing more altruistic motives and a second oriented more towards private economic benefits. In particular, consistent with a preliminary correlation analysis,<sup>4</sup> results from the factor analysis confirm that motivations are organized around two relatively unique factors which together

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<sup>3</sup> These last results are somewhat consistent with two recent studies. In the first study, only 15% of surveyed companies “strongly agreed” that “going green” would lead to increased customer loyalty (Kalweit and Peterson 1999). In the second study, several large companies indicated that even if they were to purchase all of the green power their utility had to offer, they would be unlikely to gain public relations benefits (Mayer, Blank and Swezey 1999).

<sup>4</sup> The Pearsonian correlation matrix indicates high correlation between the green marketing and public image variables ( $r=0.64$ ) and between the civic responsibility and organizational value variables ( $r=0.57$ ). The employee morale variable is significantly correlated with all four of these variables (with all four correlation coefficients  $\geq 0.4$ ).

account for 45% of the variation in all variables.<sup>5</sup> Table 4 lists the factor loadings, communalities<sup>6</sup> and variance accounted for by each factor.

#### TABLE 4 HERE

The “organizational values” and “civic responsibility” criteria are loaded heavily on the first factor. With the weightings so similar, we chose to represent these two criteria as a single “altruism interest” index by summing the ranks assigned to each. The second factor contains only two items with high loadings, namely public image and green marketing considerations. These two items also share a common theme: both relate to a tangible private value received by the organization. As with the first factor, because the loadings of these two criteria are so similar we later simply sum their ranks to obtain a “private benefit” index.<sup>7</sup> Of all motivations, lower cost and regulatory risk reduction have the lowest communalities, indicating that they are not uniquely related to either factor. Employee morale loaded on both factors, suggesting that this variable contains both altruistic and private value components.

### ***Regression Analysis***

The results presented thus far suggest that altruism and employee morale are the dominant motives for purchasing green power among our sample. This contrasts with much of the recent literature in corporate environmentalism, which typically posits economic rationales for participation in environmental initiatives. To better understand the difference between our findings and the existing literature, we examined the degree to which variables such as organization size and firm type could be used to discriminate between those who place a small amount and those who place a large amount of emphasis on the traditional “private benefits” motivations of public image and green marketing in green power purchasing.

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<sup>5</sup> If three factors are extracted, the eigenvalue of the third factor falls below 1, indicating that the appropriate number of factors to extract is 2.

<sup>6</sup> Communalities measure the information (in terms of variance) that a variable has in common (through the common factors) with all the other variables.

<sup>7</sup> The correlation between the “altruism interest” index variable and factor 1 scores is .97, while the “private benefit” index variable is highly correlated with factor 2 scores ( $r = .96$ ).

Based on the factor analysis presented above, a linear regression model was constructed with the dependent variable a composite scale created by summing the rankings for the green marketing and improved public image motivations (the “private benefits” index, referred to earlier). Independent variables are described in Table 5.

TABLE 5 HERE

The specific hypotheses we hoped to test through this procedure were as follows:

- ◆ **Hypothesis 1: Private value motivations will be more significant among larger organizations.** One might reasonably expect the “private value” driven motivations of public image and green marketing to play a stronger role among larger and potentially more bottom-line oriented customers. If this were the case, then our overall finding on the importance of altruism as a principal motivator might be partially explained by the relatively small size of the firms in our overall sample.
- ◆ **Hypothesis 2: Organizations with more environmentally conscious customers will ascribe higher importance to private value motivations.** It is also plausible that those organizations that believe a higher proportion of their products or services are consumed by individuals who make a concerted effort to “buy green” will also be more able to capture private value from green power purchases and will therefore be more motivated by public image and green marketing concerns.
- ◆ **Hypothesis 3: Those organizations that see strategic value in purchasing green power will be more motivated by private value interests.** Extracting material value from a green power purchase may further depend on the actions of an organization’s peers (Arora and Gangopadhyay 1995, Walley and Whitehead 1994). One could make a plausible argument, for example, that being among the first to purchase green power would differentiate a firm and provide public relations and marketing benefits relative to a later purchase. We asked respondents to indicate the extent to which they felt that being among the first in their peer group to purchase green power is an effective way to set themselves apart. We hypothesize

that those who believe that it is strategically important to be an early adopter of green power are also more likely to rank private-value motivations highly.

- ◆ **Hypothesis 4: For-profit companies will be more motivated by private value interests than non-profit or public institutions.** Finally, we expected that those organizations that are more profit oriented will also be more concerned about marketing and public image.

We employed a “general to specific” approach in developing our preferred regression model, starting with a general model which included all independent variables that could conceivably help explain the variation in the response variable, and eliminating in a stepwise fashion those which were found to be insignificant. Although no prior hypotheses were made regarding customer type (retail versus wholesale) and green power premium variables, they remain in the reduced model because their inclusion was found to improve the explanatory power of the model. All data were standardized prior to the analysis so the relative magnitudes of the estimated regression coefficients could be more meaningfully interpreted. The results of our preferred model regression are presented in Table 6.<sup>8</sup>

TABLE 6 HERE

Though the explanatory power of the resulting model is relatively low (adjusted  $R^2 = 0.22$ ), the results do support several of our hypotheses.

- Perhaps most importantly, the regression results support Hypothesis 1, with a statistically significant and positive regression coefficient for organization size. Apparently, larger firms

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<sup>8</sup> To test the robustness of this model we also used the same independent variables to examine responses to the more tangible question relating to the organization’s activities to “get the word out” about their purchase through press releases, secondary marketing, and the like. As the construct being tested in both models was the degree of importance ascribed to “private” value, we expected these two regressions to produce similar results. Most of the salient results of that analysis are consistent with the results presented in this article.

place greater emphasis on public image and green marketing concerns when purchasing a renewable energy product than do smaller organizations.<sup>9</sup>

- Similarly, the regression results support Hypotheses 2 and 3, with significant regression coefficients for both variables, showing that organizations with higher numbers of environmentally committed customers and organizations that see strategic value in purchasing green power are more likely to ascribe importance to public image and green marketing motivations.
- The regression coefficient for the organization type variable is statistically significant but is of the opposite sign than we expected. This finding implies that private interest motivations are more important among not-for profit and public institutions than among for-profit firms. Consequently, Hypothesis 4 is not supported by this data
- Other independent variables for which we had no prior hypotheses were also found to have some significance. For example, our results show that those paying a higher premium are less likely to be motivated by private interests than those paying less for green power. Furthermore, utility customers appear to be more likely to be motivated by private benefits than their marketer customer counterparts.

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<sup>9</sup> Not only is this finding plausible, but it is supported by a recent study that found altruistic concerns to be more likely to influence the decision making processes of smaller firms than their larger counterparts (Kalweit and Peterson 1999).

## **Further Evidence on the Importance of Altruistic Motivations**

We acknowledge that the results presented above – suggesting that altruistic concerns are a dominant motivator and that private-value concerns are less prevalent, at least among the smaller firms in our sample – are subject to doubt. After all, organizations can be expected to exaggerate the importance of such altruistic concerns when asked about their motivations.

Further evidence of the importance of altruistic motivations, however, can be found in the answers of our respondents to other survey questions. We group this evidence under three areas, described below. As shown, survey results from each of these areas offers further support for the importance of altruistic factors in green power purchase decisions, at least among our sample.

### ***Extracting Public Image and Green Marketing Value***

Initial support for our findings comes from a comparison between stated motivations and reported behavior. In particular, the survey asked whether the respondents' organizations had engaged in or had plans to engage in any of a number of activities to "get the word out" about their green power purchase, including:

1. educating the organization's employees about green energy,
2. developing point of sale marketing or public education material,
3. issuing press releases announcing the green power purchase, or
4. highlighting the purchase in reports to shareholders, members, or funding sources.

If non-altruistic concerns were principal motivators in the purchase decision, one would expect that such efforts would be commonplace. Figure 1 reveals, however, that with the exception of employee outreach, very little secondary marketing has taken place. Nor do the vast majority of respondents have any plans to greatly increase their efforts in these areas. These results certainly do not contradict the tentative conclusion that altruistic motives have been a principal driver to green power purchases thus far, followed by a desire to improve employee morale.

FIGURE 1 HERE

Meanwhile, Figure 2 shows that, as expected, there is a relationship between stated motivations and reported behavior: those organizations that identify green marketing and public image as being significant motivators in their purchase are also more likely to have engaged in behaviors to “get the word out” about their purchase. The horizontal axis measures the “private benefits” index discussed earlier, which is simply the sum of the rankings of the green marketing and public image motivations. The vertical axis measures the degree to which organizations engaged in secondary marketing activities on an 8-point scale: 2 points for each activity already undertaken and 1 point for each planned activity. As illustrated by the figure, those organizations that rate highly on the “private benefits” index are also far more likely to have engaged in or have plans to engage in various forms of secondary marketing to capitalize on their purchase. The fact that very few organizations have engaged in or have plans to engage in significant secondary marketing of their purchase therefore strongly suggests that green marketing and public image considerations are of secondary importance relative to altruistic concerns.

FIGURE 2 HERE

Nor are our respondents unhappy with their green power purchases, as one might expect if they had hoped to derive marketing value but had been unsuccessful in garnering that value. On the contrary, our survey respondents appear largely satisfied with their purchase and state a high likelihood of continuing their purchase. In particular, we asked our sample whether their purchase had provided the benefits that they anticipated (5-point scale; 1 = not at all, 5 = completely). Though only 24% state complete satisfaction, 86% of customers marked a 3 or over on this response scale. Similarly, only 2.5% of respondents indicate that they are unlikely to renew their green power purchase when the current contract or commitment ends (defined as marking 1 or 2 on the 5-point response scale; 1 = not very likely, 5 = very likely), compared to 87% of customers who indicate a strong likelihood of renewal (defined as marking a 4 or 5 on the response scale)

### ***Green Power Selection Criteria***

Customers might use a variety of decision criteria in selecting green power suppliers and products. Additional insight into the motivations of non-residential purchasers of green power therefore comes from survey questions that queried customers on their green power supplier and product selection criteria. In particular, customers were asked to rate the importance of various criteria in their selection of a green power supplier and product on a 5-point scale, with “1” being “not important” and “5” being “very important.”

Tables 7 and 8 report the results. A key finding to emerge from the data presented in these tables is that customers systematically give more importance to the environmental reputé of the supplier and the environmental content of the product than other, more pragmatic possible decision criteria involving cost and convenience. These results reinforce our finding that the non-residential early adopters of green power represented in our sample are motivated more by altruistic, environmental concerns than profit-oriented concerns.

In particular, Table 7 shows that the socially responsible supplier criterion has the highest mean response, following by whether the supplier was easy to work with, had a good reputation, and appeared financially sound. Whether the supplier is local is of least importance overall.

TABLE 7 HERE

Table 8 reports the results of the product criteria. Overall, the percent of renewable energy is found to be the most important product-based selection variable, followed closely by whether the customers’ premium is used to support new renewable energy facilities (rather than existing facilities) and the type of renewable energy included in the product (e.g., wind, biomass, geothermal, solar, etc). Price, often thought to be the most important of all criterion in product purchase decisions, emerges as the fourth most important criterion in this sample. Contract length and whether renewable generation is located in state are significantly less important.

As also shown in Table 8, smaller organizations in general appear more driven by the environmental quality criteria than larger ones, with larger organizations ranking price as being

relatively more important.<sup>10</sup> This is also consistent with the previously reported regression results, which show that the larger organizations in our sample are more driven by private benefits than their smaller counterparts.

TABLE 8 HERE

### ***Policy Preferences***

Support for renewable energy can come from one of two sources: voluntary purchases of green power products by consumers or collective public policy measures. While voluntary approaches to environmental policy have become increasingly popular in Europe and North America, collective policy measures have historically been the principal mode of support for renewables. Contemporary policy options include the system-benefits charge (where all electricity consumers pay more for their electricity in order to raise funds to finance renewable energy projects), the renewables portfolio standard (where all utilities and power suppliers are required to include a minimum percentage of renewable energy in their supply portfolios), and further pollution taxes or regulations (where pollution from electricity generation is taxed or further regulated).

The presumption of the profit-maximizing firm implies that, in most cases, firms will disapprove of or be neutral to new environmental regulations.<sup>11</sup> Further support for the importance of altruism in current green power purchases – and against the standard presumption of strict profit-maximization – comes from responses to a survey question that asked respondents to rate their preference for different support mechanisms, including those identified above.

If non-residential purchasers of green power were more motivated by the private marketing and image benefits than by the environmental benefits accruing to society as a whole, one would expect respondents to indicate a strong preference for voluntary approaches to supporting

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<sup>10</sup> Though the data are not shown here, we note that these trends are particularly apparent and strong among the utility customers.

<sup>11</sup> An exception to this rule occurs when, as discussed earlier, a firm believes that regulation will be created in a way that creates barriers to entry to possible competitors or otherwise provides competitive advantages to the firm.

renewable energy. After all, private benefits can not easily be captured in the context of mandatory support.

In contrast, when asked to register their support for different ways to encourage renewable energy development, majorities of our survey respondents preferred public policy measures over voluntary consumer choice. In particular, on a 5-point scale (1 = do not support, 5 = strongly support), the renewables portfolio standard was the most strongly supported of the options with a mean response of 4.2, followed by a pollution tax (3.9) and a system-benefits charge (3.5). Among these organizations, a voluntary approach to supporting renewable generation is the least preferred alternative with a sample mean of 3.1. Among our sample of early adopters, non-residential green power purchasers apparently acknowledge what they believe to be a limit to the effectiveness of such voluntary programs.

## **Conclusions**

This study presents one of the first detailed looks at business, non-profit, and public sector green power purchasers. Perhaps the most interesting contribution of this research comes in its demonstration of the importance of altruism as a motivator for non-residential early adopters already purchasing green power in the United States. This finding, and the further discovery that the principal non-altruistic motivation for purchasing green power is employee morale, differs from the existing literature on the motivations of firms to exceed environmental regulations. The existing literature focuses on motivations that are tightly linked to direct economic gain by the firm, and typically downplays the potential role of altruism (Fri 1992, Arora and Cason 1996). Our findings, however, suggest that these traditional motives are of lesser importance in understanding current green power purchases; instead, we find evidence that altruistic motivations extend beyond the residential market.

The findings of this paper further suggest that the discrepancy between the existing literature on organizational motivations and our results may be driven by the size of the firms considered. In particular, our regression results find that the traditional “private benefit” motivations of public image and green marketing become stronger for larger organizations. Because the existing literature focuses principally on some of the largest firms – whereas our sample includes a majority of smaller firms – it may be that altruism is a much more influential motivator among smaller organizations that are torn by both business and personal motives. This finding is intuitively plausible. Accordingly, while the emphasis of the existing literature on private benefits as drivers for voluntary environmental initiatives may be accurate for the motivations of the largest firms in the U.S. economy, the conclusions presented in this paper suggest that those results may not be easily generalized to smaller sized firms such as those represented in our sample.

As an example, several studies have found that larger organizations are more likely to participate in voluntary environmental programs (Welch, Mazur and Bretschneider 2000, Arora and Cason 1996), perhaps because larger firms are better able to extract private value from such initiatives (larger companies may be better able to take advantage of economies of scale in environmental

programs, for example, or they may be more often the target of external pressure). Conversely, when altruism is a principal motivator (as it is among our sample) one would expect that participation would peak among smaller organizations. This is consistent with a recent study that found that smaller businesses were more willing to pay a premium for cleaner energy than were larger firms (Hoefgen 1999).

Our findings should also be of more than academic interest, and have important implications from marketing and public policy perspectives. From a practical marketing perspective, for example, our findings imply that green power purveyors may find initial success in marketing their product in an altruistic way, emphasizing the environmental and social benefits of the purchase. A further emphasis on the ways in which a purchase can contribute to employee morale and retention, a focus not presently taken by most marketers, may also attract non-residential early adopters. On the other hand, more traditional messages that emphasize the green marketing, public image, or regulatory risk reduction benefits of the purchase may not immediately activate interest among early adopters representing smaller organizations, but may be important in attracting larger businesses to consider a green power purchase. Moreover, these more traditional messages can be expected to become increasingly important as the market for green power moves beyond the small set of dedicated early adopters.

The fact that altruism is a principal motivator to current non-residential green power purchases, and that purchasers are apparently receiving little material private value, also cautions against relying exclusively on voluntary demand to meet what are public environmental objectives in the development of renewable energy resources.<sup>12</sup> The non-residential green power market is, today, a small market, and there are most certainly limits to altruism among firms. Appeals to altruism may attract early adopters of green power, but if green power is really to flourish among non-residential customers (and especially larger customers), green power providers will need to better communicate the private rewards of the purchase. If green power purveyors are unable to

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<sup>12</sup> This implication stands in contrast to Arora and Cason (1996), who conclude that voluntary environmental initiatives may hold great promise because the largest firms with the most toxic releases are more likely to participate in a toxic reduction program.

credibly offer such rewards, non-residential green power demand is likely to be limited principally to smaller firms willing to give up some profits to provide a public good.

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**Table 1. Survey Response Rates**

| <b>Program Type</b>   | <b>Surveys Mailed</b> | <b>Undeliverable or Bad Addresses</b> | <b>Completed Responses</b> | <b>Response Rate<sup>1</sup></b> |
|-----------------------|-----------------------|---------------------------------------|----------------------------|----------------------------------|
| Competitive Marketers | 1,234                 | 44                                    | 222                        | 19%                              |
| Regulated Utilities   | 566                   | 23                                    | 242                        | 45%                              |
| <b>TOTAL</b>          | <b>1,800</b>          | <b>67</b>                             | <b>464</b>                 | <b>27%</b>                       |

<sup>1</sup> Calculated as: (completed responses) / (number of surveys mailed – undeliverable or bad addresses)

**Table 2. Motivations for Purchasing Green Power**

| <b>Theoretical Motivation</b> | <b>Survey Description</b>  |
|-------------------------------|--|
| Efficiency Gains              | Lowest Cost: Green power is our cheapest electricity option  |
| Public Image                  | Public Image of our Organization: Maintaining a “green” public image is important to us  |
| Green Marketing               | Catering to the Environmentally-Conscious: It is important that we accommodate the needs and concerns of our customers, shareholders, or constituents  |
| Altruism                      | 1. Organizational Values: Our organization feels a strong and pervasive commitment to public health and the environment<br>2. Civic Responsibility: We feel a responsibility to be community leaders, not just for the environment |
| Employee Morale               | Employee Morale: Employees feel more pride in an organization that is giving back to the environment   |
| Reduced Regulatory Risk       | Reduced Risk of Future Regulation: Our voluntary actions in support of renewable energy reduce the need for further government intervention and regulation   |

**Table 3. Motivating Green Power Purchasers**

| Motivation                | Mean<br>Response | Percentages      |    |    |    |                   |
|---------------------------|------------------|------------------|----|----|----|-------------------|
|                           |                  | not<br>important |    |    |    | very<br>important |
|                           |                  | 1                | 2  | 3  | 4  | 5                 |
| ▪ Organizational Values   | 4.4              | 2                | 3  | 9  | 23 | 62                |
| ▪ Civic Responsibility    | 4.1              | 6                | 5  | 16 | 24 | 49                |
| ▪ Employee Morale         | 3.4              | 14               | 10 | 23 | 25 | 28                |
| ▪ Public Image            | 3.2              | 21               | 11 | 22 | 22 | 25                |
| ▪ Green Marketing         | 3.0              | 24               | 11 | 22 | 24 | 20                |
| ▪ Reduced Regulatory Risk | 2.6              | 38               | 13 | 17 | 15 | 17                |
| ▪ Lowest Cost             | 2.2              | 42               | 20 | 24 | 8  | 7                 |

**Table 4: Factor Loadings and Explained Variances**

| <b>Motivations</b>              | <b>Factor 1</b> | <b>Factor 2</b> | <b>Communality</b> |
|---------------------------------|-----------------|-----------------|--------------------|
| Lowest Costs                    | *               | *               | .23                |
| Public Image                    | *               | .77             | .63                |
| Green Marketing                 | *               | .75             | .62                |
| Organizational Values           | .78             | *               | .61                |
| Civic Responsibility            | .72             | *               | .54                |
| Employee Morale                 | .49             | .41             | .41                |
| Reduced Regulatory Risk         | *               | *               | .12                |
| <b>Total Variance Explained</b> | <b>22.6%</b>    | <b>22.5%</b>    | <b>45.1%</b>       |

\* Only factor loadings of 0.35 or higher are reported.

**Table 5: Regression Variables**

| <b>Variable</b>                      | <b>Description</b>   | <b>Mean</b> | <b>Std. Dev.</b> | <b>Min:Max</b> |
|--------------------------------------|--|-------------|------------------|----------------|
| <b>Dependent Variable</b>            |  |             |                  |                |
| 1. Private Benefits Motivation       | Scale constructed by summing ratings of public image and green marketing motivations   | 5.93        | 2.78             | 0:10           |
| <b>Independent Variables</b>         |  |             |                  |                |
| 1. Organization Size                 | Reported annual revenues or budgets of organization (6 possible categories)  | 1.81        | 1.20             | 1:6            |
| 2. Green Clientele                   | Percent of product of service sales perceived to come from customers that make concerted effort to purchase green products or services (6 possible categories)   | 3.96        | 1.56             | 1:6            |
| 3. First Mover Strategy              | Agreement with: “being among the first to purchase green power is an effective way for a company to set itself apart” (1 = definitely true, 5 = not at all true) | 2.66        | 1.21             | 1:5            |
| 4. Dummy 1: Non-Profit/Public Sector | Dummy equals 1 if customer is a non-profit or public sector organization   | 0.18        | 0.38             | 0:1            |
| 5. Dummy 2: Customer Type            | Dummy equals 1 if customer is being served by a competitive marketer   | 0.47        | 0.50             | 0:1            |
| 6. Estimated Premium/Discount        | Reported premium (reported annual premium paid/annual energy expenditures*100).  | 8.25        | 14.3             | -100:104       |

**Table 6: Standardized Regression Coefficients**

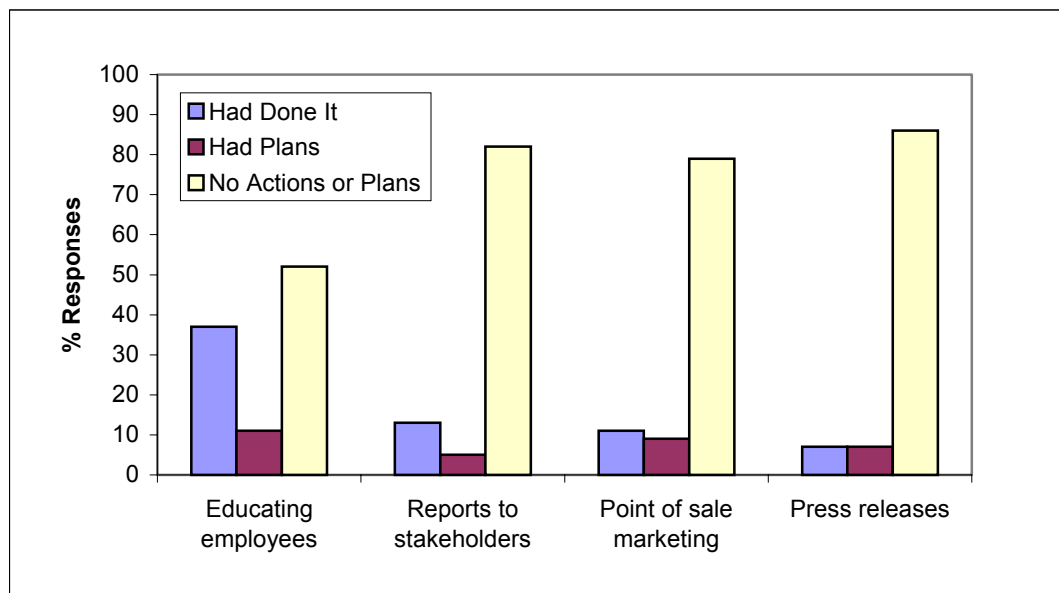
| <b>Variable</b>              | <b>Private Value Motivation</b> |                |
|------------------------------|---------------------------------|----------------|
|                              | <b>Coefficient</b>              | <b>P-Value</b> |
| Intercept                    | 0.121                           | 0.016          |
| Organization Size            | 0.176                           | 0.002          |
| Green Clientele              | 0.215                           | 0.000          |
| First Mover Strategy         | -0.218                          | 0.000          |
| D1: Public Sector/Non-Profit | 0.111                           | 0.030          |
| D2: Customer Type            | -0.137                          | 0.012          |
| Premium                      | -0.108                          | 0.028          |

**Table 7. Rating of Various Supplier Selection Criteria (mean response on 5-point scale)**

| <b>Supplier Selection Criteria</b>                              | <b>Overall Response</b> |
|---|-------------------------|
| ▪ Appears socially responsible and committed to the environment | 4.4                     |
| ▪ Easy to work with/understands our needs                       | 3.7                     |
| ▪ Good reputation as supplier                                   | 3.5                     |
| ▪ Appears financially sound                                     | 3.4                     |
| ▪ Local company   | 2.9                     |

**Table 8. Rating of Various Product Selection Criteria (mean response on 5-point scale)**

| <b>Product Selection Criteria</b>  | <b>Overall Response</b> | <b>Small Organizations</b> | <b>Medium Organizations</b> | <b>Large Organizations</b> |
|--|-------------------------|----------------------------|-----------------------------|----------------------------|
| ▪ Percent of renewable energy  | 4.2                     | 4.4                        | 4.1                         | 3.6                        |
| ▪ Focus on new renewables  | 4.0                     | 4.1                        | 3.9                         | 3.7                        |
| ▪ Type of renewable energy   | 3.8                     | 4.0                        | 3.4                         | 3.5                        |
| ▪ Price  | 3.5                     | 3.4                        | 3.4                         | 3.6                        |
| ▪ Product certified by 3 <sup>rd</sup> party or endorsed by environmental org. | 3.3                     | 3.4                        | 3.2                         | 3.0                        |
| ▪ In-state renewable generation  | 3.1                     | 3.0                        | 3.0                         | 3.5                        |
| ▪ Short contract or commitment length  | 3.0                     | 2.8                        | 3.0                         | 3.1                        |

**Figure 1: Getting the Word Out About Green Power**

**Figure 2: Secondary Marketing Efforts by Private Value Index Category**